

CLAIMS

What is claimed is:

- 1 1. A wireless communications apparatus comprising:
 - 2 a first antenna arrangement configured to transmit and receive communications
 - 3 signals on a first communications channel within a first section of a spatial
 - 4 area around the wireless communications apparatus, wherein the first antenna
 - 5 arrangement is further configured to determine whether the first
 - 6 communications channel is currently being used to carry communication
 - 7 signals before transmitting any communication signals onto the first
 - 8 communications channel; and
- 9 a second antenna arrangement configured to transmit and receive communications
- 10 signals on a second communications channel within a second section of the
- 11 spatial area around the wireless communications apparatus, wherein the
- 12 second antenna arrangement is further configured to determine whether the
- 13 second communications channel is currently being used to carry
- 14 communication signals before transmitting any communication signals onto
- 15 the second communications channel.
- 1 2. The wireless communications apparatus as recited in Claim 1, wherein the first and
- 2 second sections of the spatial area around the wireless communications apparatus do
- 3 not overlap and are not adjacent to each other.
- 1 3. The wireless communications apparatus as recited in Claim 1, wherein the first and
- 2 second sections of the spatial area around the wireless communications apparatus are
- 3 adjacent to each other.

- 1 4. The wireless communications apparatus as recited in Claim 1, wherein the first and
2 second sections of the spatial area around the wireless communications apparatus are
3 different sizes.
- 1 5. The wireless communications apparatus as recited in Claim 1, wherein the first
2 antenna arrangement is further configured to transmit and receive communications
3 signals on a third communications channel within the first section of the spatial area
4 around the wireless communications apparatus, wherein the third communications
5 channel is on a different frequency within the same frequency band as the first
6 communications channel.
- 1 6. The wireless communications apparatus as recited in Claim 1, wherein the first
2 antenna arrangement is further configured to transmit and receive communications
3 signals on a third communications channel within the first section of the spatial area
4 around the wireless communications apparatus, wherein the third communications
5 channel is in a different frequency band than the first communications channel.
- 1 7. The wireless communications apparatus as recited in Claim 6, wherein the first
2 communications channel is in the IEEE 802.11(a) frequency band and the third
3 communications channel is in the IEEE 802.11(b) frequency band.
- 1 8. The wireless communications apparatus as recited in Claim 1, wherein the first
2 antenna arrangement is further configured to transmit and receive communications
3 signals on the first communications channel using a time division multiple access
4 communications protocol.
- 1 9. The wireless communications apparatus as recited in Claim 8, wherein a carrier sense
2 mechanism is used to select the first and second communications channels.

- 1 10. The wireless communications apparatus as recited in Claim 1, wherein the first
- 2 antenna arrangement is further configured to determine whether the first
- 3 communications channel is currently being used to carry communication signals
- 4 before transmitting any communication signals onto the first communications channel
- 5 using a carrier sense mechanism.
- 1 11. The wireless communications apparatus as recited in Claim 1, wherein the wireless
- 2 communications apparatus is a wireless access point communicatively coupled to a
- 3 wired network.
- 1 12. The wireless communications apparatus as recited in Claim 1, wherein the first
- 2 antenna arrangement and the second antenna arrangement are configured to allow
- 3 simultaneous separate communications on the first and second communications
- 4 channels.
- 1 13. The wireless communications apparatus as recited in Claim 12, wherein the first and
- 2 second communications channels are the same frequency.
- 1 14. The wireless communications apparatus as recited in Claim 1, wherein the first and
- 2 second antenna arrangements are configured with different polarization orientations.
- 1 15. The wireless communications apparatus as recited in Claim 1, wherein the first and
- 2 second communications channels are selected to reduce interference between the first
- 3 and second sections.
- 1 16. The wireless communications apparatus as recited in Claim 1, wherein the first and
- 2 second antenna arrangements are configured to reduce interference between the first
- 3 and second sections.

- 1 17. The wireless communications apparatus as recited in Claim 1, wherein the wireless
2 communications apparatus is configured to dynamically change the size of the first
3 section.
- 1 18. The wireless communications apparatus as recited in Claim 1, further comprising a
2 manager mechanism configured to aggregate data received from the first and second
3 antenna arrangements.
- 1 19. The wireless communications apparatus as recited in Claim 1, further comprising a
2 manager mechanism configured to, in response to a wireless device moving from the
3 first section into the second section, updating and storing data that indicates that
4 communications with the wireless device are now to be performed using the second
5 antenna arrangement.
- 1 20. The wireless communications apparatus as recited in Claim 1, further comprising a
2 switch configured to provide for the switching of data between the first and second
3 antenna arrangements.
- 1 21. The wireless communications apparatus as recited in Claim 1, further comprising a
2 switch configured to provide for the switching of data between the first antenna
3 arrangement and a network.
- 1 22. The wireless communications apparatus as recited in Claim 1, wherein the wireless
2 communications apparatus is configured to selectively and separately manage
3 transmit power levels and receive sensitivities for the first and second antenna
4 arrangements.
- 1 23. The wireless communications apparatus as recited in Claim 1, wherein the first
2 antenna arrangement is configured to selectively and separately manage transmit
3 power levels on a per-wireless device basis.

5 a plurality of metal septums extending outward from the central metal reflector into
6 the spatial area around the antenna apparatus to define the first and second
7 sections.

1 26. The antenna apparatus as recited in Claim 25, wherein the plurality of metal septums
2 are separated from the central metal reflector to reduce electromagnetic coupling
3 between the first and second sections.

1 27. The antenna apparatus as recited in Claim 26, wherein the plurality of metal septums
2 are separated from the central metal reflector by a distance that is proportional to a
3 transmission wavelength used with the antenna apparatus.

1 28. The antenna apparatus as recited in Claim 25, further comprising a plurality of radio
2 frequency chokes disposed on the plurality of metal septums.

1 29. The antenna apparatus as recited in Claim 25, further comprising:
2 a first radiating assembly disposed between the plurality of metal septums to provide
3 wireless communications with the first set of wireless devices in the first
4 section; and
5 a second radiating assembly disposed between the plurality of metal septums to
6 provide wireless communications with the second set of wireless devices in
7 the second section.

1 30. The antenna apparatus as recited in Claim 29, wherein the first radiating assembly
2 comprises a first patch element having a first radiating element configured to transmit
3 in a first frequency band.

1 31. The antenna apparatus as recited in Claim 30, wherein the first radiating element is
2 further configured to transmit in a second frequency band.

- 1 32. The antenna apparatus as recited in Claim 30, wherein the first radiating assembly
2 comprises a second patch element having a second radiating element, wherein the
3 second patch element is oriented with respect to the first patch element to provide
4 polarization diversity.
- 1 33. The antenna apparatus as recited in Claim 29, wherein the first and second radiating
2 assemblies are separated by a specified distance and the antenna apparatus is
3 configured to select the first or second antenna apparatus to transmit or receive an RF
4 signal.
- 1 34. The antenna apparatus as recited in Claim 30, wherein the first radiating assembly
2 comprises a second patch element having a second radiating element, wherein the
3 second patch element is oriented with respect to the first patch element to provide
4 polarization diversity.
- 1 35. The antenna apparatus as recited in Claim 34, wherein the second patch element is
2 oriented at about ninety degrees with respect to the first patch element.
- 1 36. The antenna apparatus as recited in Claim 25, further comprising periodic structures
2 to reduce surface wave propagation and sector coupling.
- 1 37. A wireless communications system comprising:
2 a first antenna arrangement having a first transceiver configured to transmit and
3 receive communications signals on a communications channel within a first
4 section of a spatial area around the wireless communications apparatus;
5 a second antenna arrangement having a second transceiver configured to transmit and
6 receive communications signals on the communications channel within a
7 second section of the spatial area around the wireless communications
8 apparatus; and

9 wherein a carrier sense multiple access, collision avoidance algorithm based on
10 carrier sense or energy detect, or a point coordinating function is used to allow
11 communications on the communications channel in both the first and second
12 sections to occur.

1 38. The wireless communications apparatus as recited in Claim 39, further comprising a
2 network manager configured to control the transfer of data between the first and
3 second sections and a network.